and none of the other oaks near by gave me a single specimen, and I have never happened on them again. In Maine I have beaten the rare *Enchodes sericea* Hald., *Microbregma emarginatum* Duft., *Oligomerus obtusus* Lec. and *Elater apicatus* Say from the dead lower limbs of large sugar maples.

A final kick at a dead stub brings down the whole top smashing into the umbrella with disastrous results and, casting away the now utterly useless implement, I plod along in the pouring rain over the railroad ties towards home. When I arrive there I am soaking wet but happy in the memories of the day's experiences, and each time I open my boxes these memories will be reflected from the shining armor of *Dicerca pugionata* and *Chrysobothris harrisi*.

NOTES ON COCCIDÆ. V. (HEMIPTERA).

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(Continued from Can. Ent., Vol. 51, p 253.)

Genus PROTODIASPIS Ckll.

The original description of this genus was not sufficiently detailed, and much doubt has existed as to its exact nature. Through the kindness of Professor Cockerell I have been enabled to examine a slide mount of *P. parvula* Ckll., the type of the genus, and find it possible to extend somewhat our knowledge of this and related species.

The original description of the genus was as follows: "A genus of Diaspinæ secreting no scale but the females enveloped in cottony secretion, the male pupæ resembling those of Diaspis, but extremely short. No grouped circumgenital glands." To this genus there have previously been referred, (with some doubt) *Protodiaspis anomala* Green, *P. tridentata* Ferris, *P. edentata* Ferris, *P. agrifoliæ* Essig and *Fiorinia syncaripæ* Maskell. Of these only *P. agrifoliæ* Essig can be considered as congeneric with the type, and I am here naming a new genus for the others.

I am unable at present to offer any very precise definition of the genus *Protodiaspis*, partly because of certain possible errors in the original description that I am not able to clear up, partially because of the need of more information concerning the immature stages and partially because of the hazy limits of certain other genera. I present, however, the following characterization, this being based upon *P. parvula*, *P. agrifoliæ* and two other species that I am here describing as new.

Coccidæ referable to the subfamily Diaspinæ, secreting a distinct scale or possibly in some cases merely loose secretion; the scale of the female circular with the exuviæ central, that of the male elongate with the exuvia at one end, in both sexes white; second exuvia of female large but not at all, or at the most only partially, enclosing the adult; tubular ducts (Fig. 1B) of the type seen in *Diaspis* and related genera, all small, those of the pygidium scattered; pygidium usually weakly or not at all chitinized; circumgenital pores present or absent; lobes of the pygidium present or absent. Small species (about .5 mm. long) as far as known infesting only oaks.

Protodiaspis parvula Ckll.

1898.—*Protodiaspis parvula* Ckll., Ann. Mag. Nat. Hist., (7), 1:428.

Material Examined.—Slide mount from the type material, from oak, Mexico.

Notes.—The material examined is not in sufficiently good condition to permit the making of figures or of adding much to the original description. I may note, however, that the insect is apparently very similar to *P. agrifoliæ* Essig, differing chiefly in the absence of circumgenital pores. The dorsum of the pygidium possesses numerous small ducts, as in the latter species. I am unable to detect any lobes. The species is so very similar to *agrifoliæ* that I cannot regard the two as anything but congeneric. As *P. agrifoliæ* has a distinct scale, it appears quite possible that the original description of *parvula* is in error in the statement that this species has no distinct scale.

Protodiaspis agrifoliæ Essig.

Fig. 7.

1914.—*Protodiaspis agrifoliæ* Essig, Journal Ent. and Zool., 6:75–80, figs.

Habit.—Scale of the female white, circular, quite high convex; male, according to the original description, "The exuviæ of the males are yellow, and their position is somewhat distinct from the posterior end. The scales are little more than fluffy, snow-white cocoons, made of fine white cottony material. . ."

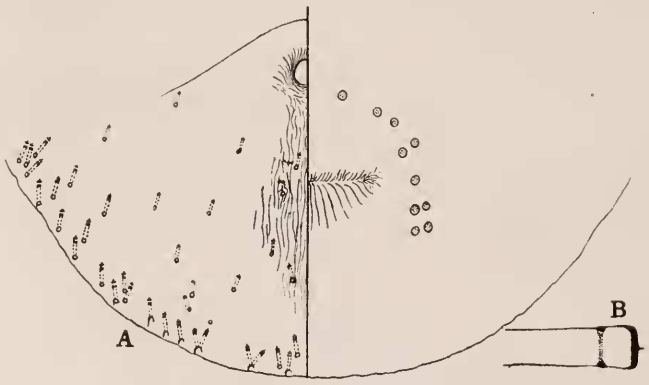

Fig. 7.—*Protodiaspis agrifoliae* Essig. A, pygidium; B, type of duct.

Adult Female.—Length .5 mm., form oval. Derm everywhere membranous except for the anal ring, and a faintly chitinized area immediately about and caudal of the anal orifice. Dorsum of the pygidum (Fig. 1A) with numerous small tubular ducts, and the margin of the body with a continuous narrow zone of such ducts. Circumgenital pores present, arranged in an almost continuous arch of 20–30 pores. There appear to be no gland spines at any point on the body.

Second Stage.—Figured by Essig as possessing small lobes, but in a mount of the exuvia at hand it appears not to differ from the adult.

Notes.—Structurally this appears to be so close to *P. parvula* that there can be but little doubt that the two are strictly congeneric, in spite of the statement that the former species possesses no definite scale.

Protodiaspis lobata, n. sp.

Fig. 8.

Type, Host and Locality.—Taken from an herbarium specimen of *Quercus gambelii*, from four miles east of Santa Fè, New Mexico.

Habit.—Scale of the female as in *P. agrifoliæ*, that of the male elongate, slender, white and non-carinate.

Adult Female.—Length .4 mm., form broadly oval. Derm everywhere membranous, except for a very small area immediately about the anal ring, one or two irregular, very small areas on the dorsum of the pygidium and the lobes. Dorsum of the pygidium with numerous scattered ducts and the margin of the body likewise with a continuous zone of such ducts. Margin of the body also with a practically continuous row of small gland spines. Pygidium with two pairs of small, irregularly-shaped lobes and with two or three pairs of small gland spines. Circumgenital pores lacking.

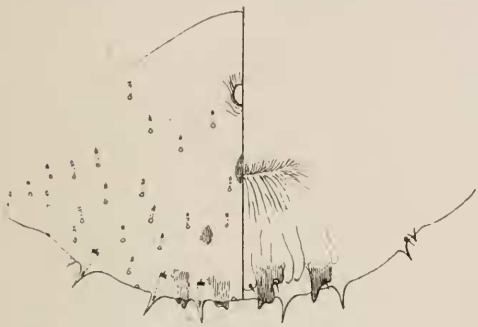

Fig. 8.—*Protodiaspis lobata*, n.sp. Pygidium.

Protodiaspis pulchra, n. sp.

Figs. 9, 10 and 11.

Type Host and Locality.—From herbarium specimen of *Quercus toumeyi*, from Pedestal Rock, Chiricahua Mts., Ariz.

Habit.—Scale of the female as in *P. agrifoliæ;* scale of the male not seen.

Adult Female — Length .5 mm.; form slightly elongate oval or somewhat irregular (Fig. 9A); cephalothorax and pygidium tending to be quite heavily chitinized. Pygidium (Fig. 10) somewhat acuminate, the tip narrowly rounded. Two pairs of lobes present, the inner pair quite close together and widely separated from the outer pair. Outer lobes composed of two lobules, of which the outer is the smaller. Dorsum of the pygidium with numerous scattered and very small ducts. Anal opening closer to the anterior margin of the pygidium than to the posterior, and slightly cephalad of the vaginal opening. Margin of the body with a continuous zone of small ducts, but without gland spines.

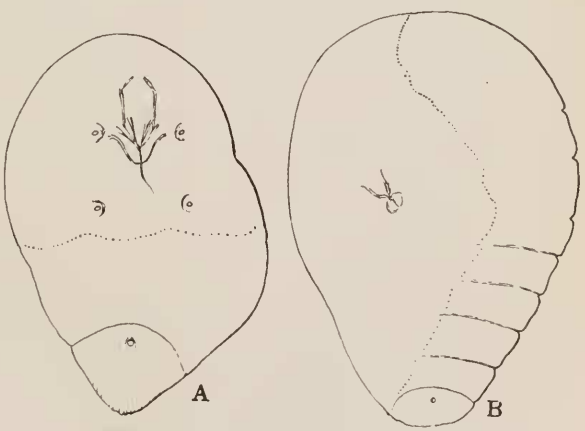

Fig 9.—*Protodiaspis pulchra*, n.sp. A, adult female; B, exuvia of second stage.

Second Stage.—Only exuviæ are available for examination. In these one side is much more heavily chitinized than the other (Fig. 9B). The pygidium (Fig. 11) is short, broad and almost truncate. There are apparently two pairs of very small lobes and the dorsum bears a few very small ducts.

Notes.—This differs rather widely from the other species

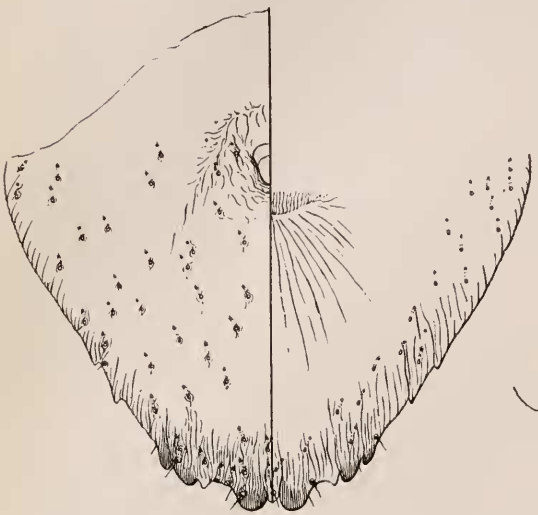

Fig. 10.—*Protodiaspis lobata*, n.sp. Pygidium of adult female.

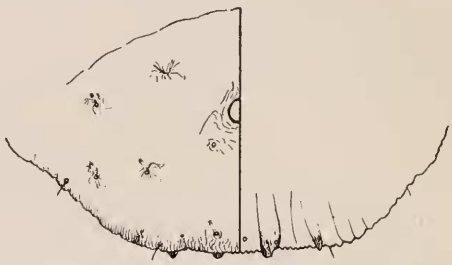

Fig. 11.—*Protodiaspis pulchra*, n.sp. Pygidium of second stage from exuvia.

of the genus, so much so as to complicate the definition of the group, but it may be referred here for the present, at least.

Genus Ancepaspis, new genus.

Coccidæ referable to the subfamily Diaspinæ but in which neither the male nor the female secretes a scale, the adult of both sexes being included within the derm of the preceding stage which becomes heavily chitinized; exuvia of second stage of female dehiscing about the posterior margin to permit the escape of the larvæ; adult female without circumgenital pores, and all stages without tubular ducts either on the pygidium or elsewhere; pygidium of the adult female with the margin more complex than that of the second stage, or at least not less complex. Small species (adult less than 1 mm. long) occurring on hosts of the families *Fabaceæ*, *Mimosaceæ* and *Cassiaceæ*.

Type of the genus, *Protodiaspis tridentata* Ferris[1].

Notes.—In addition to the type, the following may definitely be referred to this genus; *Protodiaspis anomala* Green, *P. edentata* Green and an undescribed species which I shall discuss in another paper. Green has suggested that *Fiorinia syncarpiæ* Maskell and *F. secreta* Green are congeneric with this group, but in both of these species the male is described as having a secretionary scale. I have seen the male of an *Ancepaspis* only in connection with the undescribed species mentioned above, but this species is so clearly congeneric with at least *tridentata* and *edentata* that there can be no question as to the relationship of these forms.

This is a most peculiar group, having but little resemblance to the ordinary Diaspine types. It is probably not related to such genera as *Fiorinia* and *Leucaspis*, in which tubular ducts are present at least in the nymph.

1. *Protodiaspis tridentata* Ferris, Contrib. Knowl. Coccidæ Sw. U. S., p. 46, fig. 22. *In* Stanford University Publications, University Series, 1919.